Space Weather Forecast

Issued on Wednesday, 14 August 2024 at 01:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: A chance of G1-G2/Minor-Moderate geomagnetic storms early day 1 (14 Aug). Moderate class flares likely with a slight chance of isolated strong class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with two low level Moderate class flares observed, both originating from spots in the southwest. There are ten sunspot regions visible on the disc. The largest region is in the southwest, displaying a complex magnetic structure. Another large and complex spot resides in the northeast and has a somewhat unusual magnetic configuration. All other spots are currently small and simple.

A filament eruption was observed in the southwest of the disk around 13/0800UTC, with the subsequent coronal mass ejection analysed to be missing Earth. No further Earth-directed coronal mass ejections were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of active coronal mass ejection magnetic cloud conditions, with a gradual exit. Solar wind speeds were slightly elevated at first, but have since eased to slow-ambient. The Interplanetary Magnetic Field was initially strong, peaking at 13/0350UTC, before slowly easing to weak to end the period. The north-south component was positive for the majority of the period, becoming predominantly weakly negative after 13/1624UTC. Geomagnetic activity ranged between Quiet to Active levels (Kp1-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast, with Moderate-class flares considered likely and a slight chance of an isolated Strong-class flare.

Solar Wind /Geomagnetic Activity: Influence from the coronal mass ejection magnetic cloud is continuing to wane, with all solar wind declining close to slow-ambient levels. There remains a chance of the late arrival of up to two coronal mass ejections early on day 1 (14 Aug), though these are thought to have most likely been encompassed within the aforementioned magnetic cloud experienced 12 Aug. Barring any coronal mass ejection influence, the fast wind from coronal hole 58 is likely to pass north of the Earth-Sun line with no appreciable enhancement expected, therefore solar winds should remain around slow-ambient levels.

Geomagnetic activity is expected to be mainly Quiet to Active (Kp2-4) through the start of the period. There remains a chance of up to two glancing CMEs early day 1 (14 Aug), therefore bringing a chance of G1-G2/Minor-Moderate Storming (Kp5-6), with a very slight chance of a G3/Strong storm (Kp7) interval. Geomagnetic activity then expected to decline later in the period to Quiet (Kp1-2) in the absence of any further CMEs.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Energetic Particles / Solar Radiation: A heightened risk of flare activity brings the slight chance of reaching or exceeding Minor Radiation Storm levels should any significant flares occur, although this risk reducing slightly through the period.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	10	5	1
Strong	G3	No	2	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	30	20	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.